REMARKS

Claims 1-30 are pending in this application. Claims 2-3, 24 and 26 are cancelled. Claims 1, 6-11, 13-16, 18, 20, 21, 23 25, and 27-30 are amended. Support for the amendments to claims 1, 13, 23-25 and 30 can be found, for example, in cancelled claims 2 and 26, and original claim 23, as well as in the specification on page 14, lines 10-30. Support for new claims 31-38 can be found, for example, in cancelled claims 2 and 26, and original claims 1, 2, 13, 17, 21, 23, 25, 27 and 28, as well as in the specification on page 15, lines 11-28; page 26. lines 17-20; and pages 112-114.

Claims 1, 3-23, 25 and 27-30 are therefore now pending in the present application. Reconsideration is respectfully requested in view of the following remarks.

I. Claim Objections:

The Examiner objected to claims 13 and 29 in regards to informalities in the claims. Applicant has amended claim 13 to remove the reference to Figure 14, and amended claim 29 to properly depend from claim 28, in order to correct the informalities. Applicant has also amended claim 29 to correct a typographical error. Based on this amendment, Applicant respectfully requests withdrawal of this objection.

II. Claim Rejections Under 35 U.S.C. 101:

The Examiner rejected claims 23, 24 and 30 under 35 U.S.C. 101 as being directed to non-statutory subject matter. Applicant has cancelled claim 24. Applicant has amended claims 23 and 30 to now read "Computer readable medium comprising computer executable instructions", and thanks the Examiner for her suggestion. Based on this amendment, Applicant respectfully requests withdrawal of this rejection.

III. Claim Interpretation:

The Examiner has interpreted "substantially real time" to refer to "a short period of time between process steps", "voxel" to mean "a point or three dimensional volume from which one

or more measurements are made", and "instruction(s)" to denote "any instruction to [overtly] perform a physical or mental action that is communicated to a subject."

In order to expedite prosecution of the pending application, Applicant will withhold from traversing the interpretation of these terms. However, Applicant respectfully makes clear that this should not be considered as an admission as to the accuracy of the terms recited above.

IV. Claim Rejections Under 35 U.S.C. 102(b) to Voyvodic:

The Examiner rejected claims 1, 2, 6-12, 16, 25-27 under 35 U.S.C. 102(b) as allegedly anticipated by Voyvodic. Applicant has amended the claims to overcome this rejection.

The Examiner states that Voyvodic discloses a computer assisted method and software for substantially, or nearly, real time integration of fMRI behavioral and physiologic data. The Examiner contends that Voyvodic also allows poor task performance or excessive motion to be identified in time to make corrections, and therefore implicitly instructs the patient to repeat the task or not to move or breathe. Moreover, the Examiner states that Voyvodic further displays activated voxels in a region of interest (such as the visual cortex) with respect to the entire brain where voxel sizes are approximately 3.2x3.2x3 mm and 0.94x0.94x1.5 mm.

Applicant respectfully submits that Voyvodic does not measure activity of one or more internal voxels of a brain, and communicate information employing computer executed logic to the subject in real time relative to when the activity is measured. Applicant has amended claims 1 and 25 to require use of computer executable logic to communicate the information to the subject. Therefore, the rejection no longer applies to these amended claims and their dependents. Applicant respectfully requests that the Examiner withdraw the rejection.

V. Claim Rejections Under 35 U.S.C. 102(b) to Collura:

The Examiner rejected claims 1, 3-6, 12, 16-25, 28-30 under 35 U.S.C. 102(b) as allegedly anticipated by U.S. Patent No. 5,899,867 to Collura. Applicant has amended the claims to overcome this rejection.

The Examiner states that Collura teaches a computer assisted method and software for communicating EEG feedback and instructions to a subject. The Examiner further contends that

Collura teaches the feedback of instructions to a subject in real time based on measured/determined brain activity in a region of interest.

Applicant respectfully submits that Collura does not teach or suggest the use of fMRI for measuring brain activity in a subject. Amended claims 1, 23, 25 and 30 require that the method be carried out using fMRI. Therefore, the rejection no longer applies to these amended claims and their dependents. Applicant respectfully requests that the Examiner withdraw the rejection.

VI. Claim Rejections Under 35 U.S.C. 102(b) to Toomim:

The Examiner rejected claims 1-7, 12-20, 23-26 and 30 under 35 U.S.C. 102(b) as allegedly anticipated by U.S. Patent No. 5,995,857 to Toomim. Applicant has amended the claims to overcome this rejection.

The Examiner states that Toomim discloses a computer assisted method and software for communicating feedback and information based on measured/determined brain activity in a region of interest.

Applicant respectfully submits that Toomim does not teach or suggest the use of fMRI for measuring brain activity in a subject. Amended claims 1, 23, 25 and 30 require that the method be carried out using fMRI. Moreover, the amended claims require that information based on the measured brain activity using fMRI is communicated to the subject in real time. Instead, Toomim discloses a method for biofeedback employing light methodology to allow a subject to monitor his or her own brain functions as the subject attempts to alter a level of globalized brain function in response. Although Toomim suggests that radio frequency excitation, such as is used in magnetic resonance imaging, may be monitored to detect blood flow and oxygenation measurements in the brain, Toomim does not disclose the use of fMRI for measuring brain activity and communicating information to the subject in real time, nor does Toomim enable an ordinary artisan to use fMRI to measure brain activity and provide a subject information or instructions based on the measured activity in real time. Toomim, therefore, does not teach the claimed invention.

Furthermore, Applicant respectfully submits that Toomim does not teach or suggest the use of measurements consisting of 100 separate internal voxels, as recited in new claims 31 and 35. In addition, Applicant respectfully submits that Toomim does not teach or suggest the measurement of a region of interest, wherein said region of interest may consist of specific regions of the brain, as

recited in new claims 32-33 and 36-37. Finally, Applicant respectfully submits that Toomim does not teach or suggest communicating instructions derived through a computer executable logic process of selecting from a set of possible instructions based upon the brain activity measured, as recited by new claims 34 and 38. Toomim, therefore, does not teach the inventions claimed in new claims 31-38.

In light of the arguments presented above and the amended and added claims, Applicant respectfully requests that the Examiner withdraw the rejection.

VII. Claim Rejections Under 35 U.S.C. 103(a):

The Examiner rejected claims 13-15 under 35 U.S.C. 103(a) as being unpatentable over Collura (U.S. Patent No. 5,899,867) in view of Rosenfeld (5,450,855). Applicant has amended the claims to overcome this rejection. In view of the amendments above, it is asserted that the independent claim is in condition for allowance, and the rejection is moot.

The Examiner states that Collura uses EEG to monitor the mental state of the patient, but does not explicitly disclose the region of interest or the condition of the subject. The Examiner further states that Rosenfeld demonstrates an EEG method to treat or modify disorders such as attention deficit or depression. The Examiner concludes that it would have been obvious to an ordinary artisan at the time the invention was made to combine the method of using EEG to treat a person suffering from a disorder, such as attention deficit or depression as taught by Rosenfeld.

Applicant respectfully submits that the combination of the Collura and Rosenfeld references does not render the claimed invention obvious. Amended claim 1, and hence claims 13-15, requires that the method be carried out using fMRI. This feature is neither taught nor suggested in Collura, Rosenfeld, or their combined teachings. Therefore, the rejection no longer applies to these amended claims and Applicant respectfully requests that the Examiner withdraw the rejection.

VIII. Claim Rejections Under 35 U.S.C. 103(a):

The Examiner has also rejected claims 8-11 and 27 under 35 U.S.C. 103(a) as being unpatentable over Toomim (U.S. Patent No. 5,995,857) and Liu et al. (U.S. Patent No. 5,844,241). Applicant has amended the claims to overcome this rejection.

The Examiner states that although Toomim does not explicitly disclose the number of voxels or volume thereof, Liu et al. demonstrates that voxel sizes less than 1x1x1 cm for common imaging modalities were well known. The Examiner concludes that it would have been obvious at the time the invention was made to a person of ordinary skill in the art to obtain measurements as taught by Liu et al. in the invention as taught by Toomim et al. to obtain resolved data for more accurate diagnosis.

Applicant respectfully submits that the combination of Toomim and Liu et al. does not render the claimed invention obvious. Toomim discloses the use of light energy to illuminate and measure brain activity. Liu et al. uses ingested radioactivity and CAMI (CT scan Assisted Matrix Inversion system) to measure a voxel matrix of the size specified above. Amended claims 1, and 25, and hence claims 8-11 and 27, require that the method be carried out using fMRI. This feature is neither taught nor suggested in Toomim Liu, or their combined teachings. Therefore, the rejection no longer applies to these amended claims and Applicant respectfully requests that the Examiner withdraw the rejection.

VIII. Double Patenting:

The Examiner has rejected claims 23-28 and 30 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 3, 20-23, and 26 of co-pending U.S. Application No. 10/062,627 ("'627 application"). Also, the Examiner has rejected claims 1-3, 6-11, 13-16 and 23-30 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-3 and 6-25 of co-pending U.S. Application No. 10/628,875 ("'875 application").

In order to expedite prosecution of the pending application, Applicant has filed in response to this rejection a terminal disclaimer in compliance with 37 C.F.R. § 1.321(c), which should not be considered an admission as to the propriety of the rejection. Reconsideration and withdrawal of this rejection is respectfully requested.

CONCLUSION

In light of the remarks and amendments set forth above, Applicant believes that the claims are in condition for allowance. Applicant respectfully solicits the Examiner to expedite the prosecution of this patent application to issuance. Should the Examiner have any questions, the Examiner is encouraged to telephone the undersigned.

Respectfully submitted,

Date: November 5, 2004 By: 

Maya Skubatch
Registration No. 52,505

650 Page Mill Road
Palo Alto, California 94304-1050
(650) 849-3330
Customer No. 021971